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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/653,010	08/28/2003	Lawrence E. Pado	BO1 - 0269US	2102
60483	7590	04/30/2007	EXAMINER HIRL, JOSEPH P	
LEE & HAYES, PLLC 421 W. RIVERSIDE AVE. SUITE 500 SPOKANE, WA 99201			ART UNIT 2129	PAPER NUMBER
		MAIL DATE 04/30/2007	DELIVERY MODE PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/653,010	PADO, LAWRENCE E.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Joseph P. Hirl	2129	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 28 August 2003.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-72 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-72 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 28 August 2003 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                        |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>2/26/4</u> . | 6) <input type="checkbox"/> Other: _____.  |

## **DETAILED ACTION**

1. Claims 1-72 are pending in this application.
  
2. Examiner's Note (EN): for the purpose of examination and since the term "chirp" was not defined in the specification, using The Authoritative Dictionary of IEEE Standard Terms, chirp is defined as follows:

A form of pulse compression that uses frequency modulation (usually linear) during pulse. (AES) 686-1997 Simply, such signal is a modification to accommodate other information.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:  

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 3, 8, 20, 21, 27, 32, 44, 45, 51, 56, 68 and 69 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "around" is used to modify a given number but such modification renders the claims indefinite since the range of around could include "whatever."
5. Claims 7, 31, 55 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention. Indefiniteness arises from the uncertainty associated with the limit cited as "...includes one of a whole and a fractional number raised to an exponent ..." Is the raising of the exponent applied to just the fractional number or to a number which is made up of a number that includes a fractional part?

6. Claims 17, 18, 41, 42 , 65, and 66 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. A decision is being made on "maximum control output values" where reference of maximum was not determined. Hence the result is indefinite.

7. Claims 19, 43, and 67 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phase, "performing a fast Fourier transform of the control output in response to the control input" could mean performing a simultaneous FFT on both the control output and the control input or just performing an FFT on the control output. A similar level of ambiguity exists with performing an FFT on plant phase/plant input. Consequently the subject claims are indefinite.

8. Claims 20, 44 and 68 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. How and what does one determine related to the limitation "...future states are indicated by a sum of the control system phase and the plant phase? Further what does it mean to identify a range such as "around + 150 degrees through 180 degrees to -150 degrees inclusive? Is such a range 0 – 180 –

360 – 180 – 0 – (minus 150)? or other ranges? Such ambiguity creates a level of indefiniteness.

9. Claims 22, 46 and 70 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. These claims use the relative terms of stable, more effective and less effective related to cost function parameters, input weight and predicted future states. Simply stated, what do these terms mean? Combination of such relativity can produce “whatever.” Consequently the subject claims are indefinite.

#### ***Claim Rejections - 35 USC § 102***

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1, 2, 4-6, 9-16, 23-26, 28-30, 33-40, 47-50, 52-53, 57-64, and 71-72 are rejected under 35 U.S.C. 102(b) as being anticipated by Pado et al (USPN 6,185,470, referred to as **Pado**).

#### **Claims 1, 23, 25, 47, 48, 49, 71, 72**

Pado anticipates selecting parameters used in a cost function (**Pado**, c5:39-41); selecting an input weight to be applied to a control output by the cost function (**Pado**, c5:50-51); selectively incorporating predicted future states generated by a neural

network model (**Pado**, Fig. 1); iteratively applying a control input from a range of known signals; calculating a control output in response to the control input (**Pado**, Fig. 1; c4:52-67; c5:1-15); determining a control system phase and a control system amplitude of the control output in response to the control input (**Pado**, abstract; EN: ¶ 15. applies; phase is interpreted to be represented by a state; it is axiomatic that all electronic signals have amplitude); and combining a known plant phase with regards to a known signal equivalent to the control input and the control system phase such that effectiveness of the cost function parameters, the input weight, and the selectively incorporated predicted future states is determinable (**Pado**, abstract; EN: ¶ 15. applies; Pado's Performance Index Optimization is equivalent to a cost function).

**Claims 2, 26, 50**

Pado anticipates wherein the input weight to be applied by the cost function is iteratively selected from among a range of input weights (**Pado**, Fig. 1; c4:52-67; c5:1-15).

**Claims 4, 28, 52**

Pado anticipates selectively incorporating the predicted future states includes selecting a subset of the predicted future states generated by the neural network model (**Pado**, Fig. 1; c4:52-67; c5:1-15).

**Claims 5, 29, 53**

Pado anticipates selectively incorporating the predicted future states includes incorporating two of the predicted future states generated by the neural network model (**Pado**, Fig. 1; c4:52-67; c5:1-15).

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**Claims 6, 30, 54**

Pado anticipates selectively incorporating the predicted future states includes incorporating all of the predicted future states and combining each of the predicted future states with a forget factor such that a proportional weight is accorded each of the predicted future states (**Pado**, Fig. 1; c4:52-67; c5:1-15; EN: the forget factor is defined by weight, specification at page 3, line 9).

**Claims 9, 33, 57**

Pado anticipates sequencing the combining of the forget factors with the predicted future states such that each of the forget factors is applied to each of the predicted future states (**Pado**, Fig. 1; c4:52-67; c5:1-50).

**Claims 10, 34, 58**

Pado anticipates the range of known signals applied as the control input signal includes a chirp signal (**Pado**, c2:26-29).

**Claims 11, 35, 59**

Pado anticipates the cost function includes an expression defined on page 12, claim 11 of the specification (**Pado**, c5:44).

**Claims 12, 15, 36, 39, 60, 63**

Pado anticipates the cost function parameters selected is the position gain and the velocity gain (**Pado**, c5:48-51).

**Claims 13, 16, 37, 40, 61, 64**

Pado anticipates the position gain selected includes one of 0 and 1 and the velocity gain selected includes one of 0 and 1 (**Pado**, c5:54-55).

**Claims 14, 38, 62**

Pado anticipates includes an expression defined on page 12, claim 14 of the specification (**Pado**, c5:44).

**Claims 18, 42, 66**

Pado anticipates a combination of parameters and input weight resulting in three consecutive maximum control output values is dismissed as unstable.

***Examination Considerations***

12. The claims and only the claims form the metes and bounds of the invention. "Office personnel are to give the claims their broadest reasonable interpretation in light of the supporting disclosure. *In re Morris*, 127 F.3d 1048, 1054-55, 44USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim are not read into the claim. *In re Prater*, 415 F.2d, 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969)" (MPEP p 2100-8, c 2, I 45-48; p 2100-9, c 1, I 1-4). The Examiner has full latitude to interpret each claim in the broadest reasonable sense. Examiner will reference prior art using terminology familiar to one of ordinary skill in the art. Such an approach is broad in concept and can be either explicit or implicit in meaning.

13. Examiner's Notes are provided with the cited references to prior art to assist the applicant to better understand the nature of the prior art, application of such prior art and, as appropriate, to further indicate other prior art that maybe applied in other office

actions. Such comments are entirely consistent with the intent and spirit of compact prosecution. However, and unless otherwise stated, the Examiner's Notes are not prior art but a link to prior art that one of ordinary skill in the art would find inherently appropriate.

14. Unless otherwise annotated, Examiner's statements are to be interpreted in reference to that of one of ordinary skill in the art. Statements made in reference to the condition of the disclosure constitute, on the face of it, the basis and such would be obvious to one of ordinary skill in the art, establishing thereby an inherent *prima facie* statement.

15. Examiner's Opinion: ¶¶ 9.-11. apply. The Examiner has full latitude to interpret each claim in the broadest reasonable sense.

### ***Conclusion***

16. The prior art of record and not relied upon is considered pertinent to applicant's disclosure.

- USPubN 2001/0044789, Widrow et al
- USPN 7,142,990, Bouse et al
- USPN 6,643,569, Miller et al
- USPN 6,445,963, Belevins et al
- USPN 6,373,033, de Waard et al
- USPN 6,081,750, Hoffberg et al

- USPN 5,268,834, Sanner et al

17. Claims 1-72 are rejected.

***Correspondence Information***

Any inquiry concerning this information or related to the subject disclosure should be directed to the Primary Examiner, Joseph P. Hirl, whose telephone number is (571) 272-3685. The Examiner can be reached on Monday – Thursday from 6:00 a.m. to 4:30 p.m.

As detailed in MPEP 502.03, communications via Internet e-mail are at the discretion of the applicant. Without a written authorization by applicant recorded in the applicant's file, the USPTO will not respond via e-mail to any Internet correspondence which contains information subject to the confidentiality requirement as set forth in 35 U.S.C. 122. A paper copy of such correspondence will be placed in the appropriate patent application. The following is an example authorization which may be used by the applicant:

Notwithstanding the lack of security with Internet Communications, I hereby authorize the USPTO to communicate with me concerning any subject matter related to the instant application by e-mail. I understand that a copy of such communications related to formal submissions will be made of record in the applications file.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, David R. Vincent can be reached at (571) 272-3080. Any response to this office action should be mailed to:

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Joseph P. Hirl  
Primary Examiner  
April 26, 2007